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## C-A OPERATIONS PROCEDURES MANUAL

### 6.1.9 Requirements for Extracting Beams from the AGS

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Attachments

#### Hand Processed Changes

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Approved: Signature on File  
Collider-Accelerator Department Chairman      Date

P. Ingrassia/P.Sampson

## **6.1.9 Requirements for Extracting Beams from the AGS**

### **1. Purpose**

To provide instructions to Main Control Room (MCR) Operators that ensure safe conditions exist before extracting particles from the AGS, after a change to operating conditions, as outlined in 1.1 of this procedure, has occurred.

1.1 A change to operating conditions are defined as:

1.1.1 Setup of a particle species for the first time in a given run.

1.1.2 Restoration of beam to a primary area following a scheduled or unscheduled shutdown of 24 hours or more.

1.1.3 Restoration of beam after one or more of the accelerators has been on Restricted Access.

### **2. Responsibilities**

2.1 MCR Operators are responsible for the execution of this procedure.

2.2 Collider Accelerator Support is responsible for verifying that areas listed in [C-A OPM-ATT 6.1.9.a](#); note item 2, are swept and secured or access controlled.

2.3 The Operations Coordinator (OC) is responsible for granting permission to open the Beam Stops by signing item 7 of [C-A-OPM-ATT 6.1.9.a](#).

### **3. Prerequisites**

3.1 The LINAC (proton operations), Booster, AGS, FEB Gate 2, A target cave and B target cave, and the switchyard are on Controlled Access and have been swept and secured.

3.2 The keys to the Target Building shield tops, East Experimental Area shield tops, and the A/B crotch is in the MCR captured key locker when CAS is not on 168 hour per week watch.

3.3 Requirements for the state of the shield tops, U and/or V lines and fan houses may be changed by the Chairman of the Radiation Safety Committee, the C-A Associate Chair of ESHQ or their designates. Changes will be explicitly authorized in writing and be placed in the MCR Required Reading binder

#### 4. **Precautions**

- 4.1 If a shift change has occurred while the [“AGS Extraction Checklist”, C-A-OPM-ATT 6.1.9.a](#), is in the process of being filled out, THEN the new operator must begin a new checklist.
- 4.2 If an operator begins to enter the appropriate information on the checklist but does not complete the checklist, THEN he/she may continue to complete the checklist at a later time.
- 4.3 If starting up after or recovering from a shutdown or failure period, the Operator may elect to secure all external beam lines in order to establish beam in the AGS.
  - 4.3.1 Once beam is established in the AGS, Operator must complete the following:
    - 4.3.1.1 Close the beamstops.
    - 4.3.1.2 Enable external beam line critical devices.
    - 4.3.1.3 Complete items 1-7 of [C-A-OPM-ATT 6.1.9.a](#) of this procedure.
    - 4.3.1.4 Open beamstops and extract beam.
    - 4.3.1.5 Complete remaining items of [C-A-OPM-ATT 6.1.9.a](#).

#### 5. **Procedure**

- 5.1 Execute this procedure when beam is to be extracted from the AGS after a change to the operating conditions, as outlined in section 1.1 of this procedure.
  - 5.1.1 This procedure must be executed when protons or ions are to be extracted from the AGS. For example, BTA injection is already enabled and the LTB or TTB beam stops are to be opened or LTB (or TTB) beam stops are opened and BTA.F6 and BTA.DH2&3 are to be enabled.
  - 5.1.2 The procedure need not be executed if one of the following is true:
    - 5.1.2.1 beam stops are to be reopened after a chipmunk interlock,
    - 5.1.2.2 BTA, is disabled (F6 and DH2&3 safely off).
    - 5.1.2.3 If FEB extraction and all Primary SEB lines are Safely Off.
    - 5.1.2.4 If mode switching between two modes that have been running in the previous 24 hours.
- 5.2 Follow the instructions in [C-A-OPM-ATT 6.1.9.a](#).
  - 5.2.1 During Iron operations in the SEB Channel, Step 5.e of the checklist need not be followed and the U line upstream berm need not be swept if authorized by the RSC Chairperson or his designate in writing.

- 5.3 File complete [C-A-OPM-ATT 6.1.9.a](#) in the “Primary Beam Stops Checkoff List” binder.

**6. Documentation**

- 6.1 Completed checklist of [C-A-OPM-ATT 6.1.9.a](#).

**7. References**

- 7.1 [C-A-OPM-ATT 4.56.w, “Sweeping the SEB Switchyard-Controlled Access”](#).
- 7.2 [C-A-OPM 4.46 “ Procedure For Accessing the AGS Ring Fan Houses \(A,B,C, D and E\) and Northwest Corner of Target Building 912”](#).
- 7.3 [C-A-OPM 4.56.c, “Sweeping the AGS Ring Fan Houses \(A,B,C,D and E\)”](#).
- 7.4 [C-A-OPM-ATT 4.56.d, “Sweeping the Northwest Corner of the Target Building 912”](#).
- 7.5 AGS Secondary Beam and Access Procedure OLDDLINE.SWP, “Access or Sweep of OLD D\_Line Area/Access or Sweep of “A” Column Corridor.
- 7.6 AGS Secondary Beam and Access Procedure TOPCAT.SWP “Sweep and Clearance of the Target Building Shield top and Catwalk”.
- 7.7 AGS Secondary Beam and Access Procedure TPCT-EEA.SWP “ Sweep and Clearance of EEA Shield Top”.

**8. Attachments**

- 8.1 [C-A-OPM-ATT 6.1.9.a “AGS Extraction Checklist”](#).